

subspecies of *Acanthis linaria*, because it intergrades perfectly with that species, but not with *Acanthis hornemanni*. While of course in some plumages certain specimens are difficult to distinguish, the same is true of many another distinct species. Present comparisons, based on specimens in breeding plumage, show that *Acanthis hornemanni exilipes* and *Acanthis linaria linaria* are usually separable by the white rump and the slight streaks on the under tail-coverts of the former, which are the characters that ally *Acanthis hornemanni exilipes* to *Acanthis hornemanni hornemanni*; in fact, in ordinary condition *Acanthis hornemanni exilipes* is a miniature of *Acanthis hornemanni hornemanni*, though it averages somewhat darker. A further and serious obstacle to considering *Acanthis hornemanni exilipes* a subspecies of *Acanthis linaria linaria* is that both breed on the same ground over a wide geographic area extending from Ungava to southern Keewatin and Alaska, and that they retain their distinctive characters everywhere, although apparently sometimes hybridizing. It is evident, therefore, that whatever the relationship of *Acanthis hornemanni exilipes* to *Acanthis hornemanni hornemanni*, the former cannot by any means be a subspecies of *Acanthis linaria*.

THE SUBSPECIES OF *LARUS HYPERBOREUS* GUNNERUS.

BY HARRY C. OBERHOLSER.

No subspecies of *Larus hyperboreus* have hitherto been formally recognized. Recent investigation, however, has shown that the bird of Alaska, described by Mr. Ridgway as *Larus barrovianus*, is a readily separable race. Its relationships with *Larus hyperboreus hyperboreus* are set forth below.

For the purpose of the present study the writer has been privileged to examine 240 specimens, including the type of *Larus barrovianus*, which number represents the entire material of this

species in the collections of the following institutions and individuals: the United States National Museum, including the Biological Survey; the Academy of Natural Sciences of Philadelphia; the American Museum of Natural History; the Museum of Comparative Zoölogy; and the Brooklyn Museum of Arts and Sciences; Mr. John E. Thayer, Mr. William Brewster, Mr. A. C. Bent, Dr. J. Dwight, Dr. L. B. Bishop, and Dr. L. C. Sanford.

Larus hyperboreus hyperboreus Gunnerus.

[*Larus*] *glaucus* BRÜNNICH, Ornith. Bor., 1764, p. 44 (Iceland) (nec *Larus glaucus* Pontoppidan, 1763, qui *Larus canus* Linnæus).

Larus hyperboreus GUNNERUS, in Leem's Beskr. Finm. Lapper, 1767, p. 226, footnote (northern Norway).

Larus giganteus BENICKE, Ann. Wetterau. Gesellsch., III, 1812, p. 140 (Baltic Sea, northern Europe) (Temminck MS.).

Larus maximus O'REILLY, Greenland, the Adjacent Seas, etc., 1818, p. 141, pl. XIII (Greenland Seas) (nec *Larus maximus* Forster, 1817, qui *Larus marinus* Linnæus) (Bullock MS.).

Larus leucereetes SCHLEEP, Ann. Wetterau. Gesellsch., IV, Heft II, 1819, p. 314 (in text) (far north [of Europe]; accidental on coast of Germany) (Meyer MS.).

Larus consul BOIE, (Wiedemann's) Zool. Mag., I, pt. III, 1819, p. 126 (near Helsingör, Denmark).

Larus medius BREHM, Beitr. Vogelk., III, 1822, p. 810 (Seeland I., Denmark).

Larus islandicus EDMONSTON, Mem. Wern. Soc., IV, 1822, p. 185.

Larus minor BREHM, Handb. Naturg. Vög. Deutschl., 1831, p. 736 (nom. nov. pro *Larus medius* Brehm).

Larus glacialis BREHM, Lehrb. Naturg. Europ. Vögel, II, 1824, p. 704 (extreme northern colony of Greenland) (Benicke MS.).

Larus Hutchinsii RICHARDSON, Fauna Bor.-Amer., II, 1831 (1832), p. 419 (Albany River, Ontario).

CHARS. SUBSP.—Size large; mantle pale.

MEASUREMENTS.¹—Male: wing, 457–483 (average, 468) mm.; tail, 190–213 (198); exposed culmen, 60–69 (63.8); height of bill at base, 21–26 (23); tarsus, 70–75 (72); middle toe with claw, 69–74 (71).

Female: wing, 432–451 (average, 441) mm.; tail, 184–206 (191); exposed culmen, 56–61 (57.9); height of bill at base, 19–22 (20.2); tarsus, 66–73 (69); middle toe with claw, 63–72 (67).

¹ From Dwight, 'The Auk,' XXIII, No. 1, January, 1906, p. 28, except for dimensions of bill, which have been remeasured for the present use.

TYPE LOCALITY.—Northern Norway.

GEOGRAPHIC DISTRIBUTION.—Europe, Asia, eastern and middle North America. Breeds north to Wrangell Island in northeastern Siberia, New Siberia Islands north of Siberia, Crown Prince Rudolph Island in Franz Josef Land, Spitzbergen, northern Greenland, Grant Land, and Prince Patrick Island in Franklin Territory; west to Prince Patrick Island, Melville Island, and Coronation Gulf in Mackenzie; south to Coronation Gulf, Cape Fullerton in Keewatin, Great Whale River in central western Quebec (Ungava), Newfoundland, Hopedale in eastern Labrador, southern Greenland, Iceland, northern Norway, and the coast region of northeastern Europe and northern Siberia; and east to the Pribilof Islands, Alaska, and the Diomed Islands, northeastern Siberia. Winters north to the coast region of northern Siberia, the coast of northern Europe, Iceland, southern Greenland, and Baffin Land; and south to Japan, the northern part of the Caspian Sea, Akaba on the northern part of the Red Sea, Gibraltar, England, Ireland, North Carolina, northern Pennsylvania, northwestern Indiana, and casually to northern Texas.

Remarks.—In this, the typical form of the species, the mantle is very constantly pale, but size as a differential character is more variable. Birds from Davis Strait and Cumberland Sound, west of Greenland, seem to be as large and pale as Old World examples. All of the birds examined from eastern Siberia and Japan belong also to this race. A single adult from Walrus Island in the Pribilof group, taken, June 13, 1890, and now in the United States National Museum, is very large and pale; in fact, is of maximum size, and in color fully as light as the palest specimens of the present race; and, since the species is known to breed on this island, probably represents the resident form. A single specimen from Akaba on the northeastern arm of the Red Sea is the southernmost record for any form of *Larus hyperboreus*.

The well-known wholly white plumage phase of this gull, which was described by Richardson as *Larus hutchinsii*,¹ seems to be, as indicated by Dr. J. Dwight,² a subadult plumage of the second year, although it is possible that not all individuals pass through this condition. As explained under *Larus hyperboreus barrovianus*, the specimen of Glaucous Gull already recorded from northern Texas proves to belong to that race; but there is in the collection

¹ Fauna Bor.-Amer., II, 1831 (1832), p. 419 (Albany River, Ontario).

² 'The Auk,' XXIII, No. 1, January, 1906, p. 32.

of the Museum of Comparative Zoölogy at Cambridge, Massachusetts, where it is number 32371, an additional Texas specimen, taken by Mr. G. H. Ragsdale in northern Texas, presumably near Gainesville, but without exact date of capture, which is an example of *Larus hyperboreus hyperboreus*.

The name *Larus glaucus* Brünnich,¹ which has until recently been used for this species, is found to be preoccupied by *Larus glaucus* Pontoppidan,² which is a synonym of *Larus canus* Linnæus. The proper name for the species, therefore, becomes *Larus hyperboreus* Gunnerus,³ which, in point of date, is the next available name.

Of *Larus hyperboreus hyperboreus* 129 specimens have been examined, from the localities in the subjoined list:

Alaska.—Walrus Island, Bering Sea (June 13, 1890).

Franklin.—Brevoort Island, Ellesmere Land (May 21, 1900; June 10, 1901; Aug. 1, 1900; July 25, 1900 [nestling]); Rice Strait, Ellesmere Land (June 5 and 8, 1901); Cape Sabine, Ellesmere Land (Sept. 15, 1900); Buchanan Bay, Ellesmere Land (June 10 and 16, 1901); Alexander Haven, Ellesmere Land (July 25, 1900); Cumberland Sound (June 27, 1878; Sept. 6, 1878); Niantilik, Cumberland Sound (Aug. 8, 1876; Sept. 17, 1877); Observatory Island, head of Cumberland Sound (June 4 and 6, 1878); Davis Strait (Aug. 12 and 15, 1879); Cary Island, Baffin Bay (July 24, 1894); Simpson Bay, Victoria Land (July 26, 1911 [nestling]); Meteorite Island (Aug. 13, 1897 [nestling]).

Greenland.—Sukkertoppen (Sept. 1, 1904; Oct. 24, 1905; April 25, 1906; Dec. 3, 1909); Kahkoktah Cove (Sept. 1, 1893); Anniversary Lodge (Sept. 11, 1893); Bowdoin Bay (Sept. 9, 1893); McCormick Bay (Aug. 4, 1892 [nestling]); Robertson Bay (Aug. 23, 1892); Itiblu (July 22, 1892); Littleton Island (July 22 and 27, 1892); Cape York (July 26, 1892); Port Foulke; Holsteinborg (June 20, 1895; July 6, 1895; May 12, 1897; Sept. 21, 1898); Parker Snow Bay (Aug. 11, 1896); Julianehaab (April 6, 1908; May 4, 1909); Nyskotefjord (Aug. 17, 1900); Etah (July, 1910);

¹ Ornith. Bor., 1764, p. 44 (Iceland).

² Danske Atlas, I, 1763, p. 622.

³ In Leem's Beskr. Finn. Lapper, 1767, p. 226 (footnote).

Umanak (August, 1896); Hakluyt Island (July 19, 1901); Northumberland Island (July 11, 12, and 18, 1901).

Labrador.— Ramah (July, 1898); Lance au Loup (Dec. 1 and 17, 1899); Okak (July 19, 1896); Ailik (Nov., 1899); Nakvak (autumn, 1883).

Mackenzie.— Coronation Gulf (July 20, 1911 [nestling]; June 15, 1911).

New Brunswick.— Grand Manan I. (March, 1883; March 1, 1884; Feb. 10, 1898; Jan. 25, 1874).

Newfoundland.— Curselet (Dec. 31, 1894).

Nova Scotia.— Sable Island (Jan. 2, 1895; Feb. 12, 1895).

Quebec.— Tadousac (winter, 1901); Fort Chimo, Ungava (Dec. 18, 1882).

Maine.— Portland (Jan. 19, 1900; Mar. 4, 1891); Kittery Point, York County (Feb. 14, 1891); Ilsford (Dec. 20, 1886).

Massachusetts.— Charles River, Boston (April 4, 1881); Chatham (Feb. 13, 1917).

New York.— Washington County (January, 1860); Sag Harbor, Suffolk County (Dec. 11, 1890); Montauk, Long Island (Feb. 8, 1890).

Texas — [near Gainesville].

Great Britain.— Breakness, Orkney Islands (March 18, 1869).

Norway.— Bergen (Feb. 2, 1882).

Spitzbergen.— Isfjarden (June 16, 1900); Green Harbor (August, 1881).

Japan.— Otaru, Hokkaido Island (Feb. 20, 1899); Shiribeshi (November, 1906); Hakodate (March 25, 1887).

Siberia.— Kolyuchin Bay (July 9, 1909 [5 nestlings]); Cape Serdze (July 29, 1910); Novo Marinsk, at head of Gulf of Anadyr (1901); Diomedede Islands, Bering Strait (July, 1881); Gichiga (Sept. 21, 1900); Whalen Bay (July 20, 1910); Indian Point (August 9, 1910); Cape Bolshaja Baranow (July 6, 1912); Koliutschin Island (July 3 and 9, 1909 [nestlings]); northeastern Siberia (June 4 and 5, 1907); Semiavine Strait (= St. Lawrence Bay).

Turkey in Asia.— Akaba, Red Sea (April 18, 1914).

Larus hyperboreus barrovianus Ridgway.

Larus barrovianus RIDGWAY, 'The Auk,' III, No. 3, July, 1886, p. 330 (Point Barrow, Alaska).

CHARS. SUBSP.—Similar to *Larus hyperboreus hyperboreus*, but smaller, the bill particularly so, and relatively as well as actually more slender; mantle decidedly darker; and the line of demarcation between the white tips to the primaries and the pale grayish basal portions usually more evident.

MEASUREMENTS.¹—Male: wing, 444–470 (average, 458) mm.; tail, 178–197 (189); exposed culmen, 56–65 (61.1); height of bill at base, 20–22 (20.9); tarsus, 69–74 (71); middle toe with claw, 66–72 (69).

Female: wing, 425–457 (average, 436) mm.; tail, 171–190 (180); exposed culmen, 46–60 (52.7); height of bill at base, 17–21 (18.7); tarsus, 62–73 (66); middle toe with claw, 58–71 (63).

TYPE LOCALITY.—Point Barrow, Alaska.

GEOGRAPHIC DISTRIBUTION.—Western North America. Breeds on the Arctic coast and islands north to Franklin Bay, northwestern Mackenzie, Hershel Island, Yukon, and Point Barrow, Alaska; west to the western coast of Alaska and to Unalaska Island; south to Unalaska Island, Amak Island, and the coast region of northern Yukon and northwestern Mackenzie; east to Amak Island, and the coast region of western Alaska and Franklin Bay in northwestern Mackenzie. Winters north to the Pribilof Islands and the Aleutian Islands; and south along the Pacific Coast to Monterey, California. Accidental in northern Texas.

Remarks.—Mr. Robert Ridgway first noticed the differences characterizing this race, and many years ago described it from a specimen taken at Point Barrow, Alaska, as a distinct species, under the name *Larus barrovianus*.² His emphasis on the relatively greater depth of the bill at the angle of the gonyx, as compared with its depth at base, which now proves to be an inconstant character, was the evident reason for the rejection of the form by Dr. Dwight,³ and its relegation as a synonym to *Larus hyperboreus*. Although the relatively greater depth of the bill at the angle of the gonyx proves to be valueless as a character to separate *Larus barrovianus*, this bird is very readily recognizable by its usually smaller size and particularly smaller bill, but especially

¹ From Dwight, 'The Auk,' XXIII, No. 1, January, 1906, p. 28, except for dimensions of bill, which have been remeasured for the present use.

² 'The Auk,' III, No. 3, July, 1886, p. 330.

³ 'The Auk,' XXIII, No. 1, January, 1906, pp. 27–29.

by its decidedly darker mantle. Although it really is but sub-specifically different from *Larus hyperboreus*, the restoration of this form of Mr. Ridgway's to standing among North American gulls is a pleasurable privilege.

This race appears to be confined in the breeding season to Alaska and the territories of Yukon and western Mackenzie. No Japanese specimens have been detected among those examined, but it is not at all unlikely that *Larus hyperboreus barrovianus* does occasionally migrate to Japan. The specimen of Glaucous Gull already recorded from the Red River in Clay County, Texas, proves to belong to the present race. The type of *Larus hyperboreus barrovianus* is No. 88913 of the United States National Museum register, and is still in the collection. It was taken on August 4, 1882, by Middleton Smith, at Point Barrow, Alaska. It agrees with other specimens of this subspecies in size, but is somewhat paler on the mantle than usual individuals, and is possibly not quite adult.

We have examined 111 specimens of the present race, from the following localities:

Alaska.—St. Michael (June 15, 1880; June, 1866; Sept. 21, 1877; Sept. 18, 1875; Sept. 1, 1876; July 15, 1866; July 15, 1915; Sept. 3, 8, and 13, 1899; June 28, 1915; Aug. 8 and 14, 1915); Point Barrow (Aug. 5 and 18, 1882; July 26, 1883; May 21, 1881; Sept. 9 and 15, 1882; June 1, 1882; Sept. 5, 17, 23, and 28, 1897; Aug. 11, 20, 24, 26, and 27, 1897; June 1, 2, 8, and 17, 1898; Oct. 5, 1897); Kowak River; St. Paul Island, Pribilof Islands (June 21, 1890); Bethel (July 14, 1914; Aug. 18, 1914; July 24, 1915); Unalaska, Unalaska I. (June 9, 1911; Nov. 1, 1903; Nov. 12, 1904); Beaver Inlet, Unalaska Island (July 4, 1901 [nestling]); near Bering Strait; Nome (Sept. 19 and 21, 1913; Sept. 2 and 11, 1910; July 28, 1902; Aug. 20, 1903; Aug. 10, 1902; Sept. 14, 1900; summer, 1901); Pikmiktalik River (July 1-15, 1877); Amak Island (July 18, 1911 [nestling]); Camden Bay (Aug. 4, 1913); Port Clarence (July 27, 1895; July 24, 1897); Yukon Delta (June 29, 1914); Wainwright Inlet (Aug. 17, 1914); Gwydyr Bay (July 16, 1910); Barter Island (Sept. 4, 1908); Kulugrua River (July 13, 1898 [nestling]); Demarcation Point (June 10, 1914); Griffin Point (July 12, 1914); Nelson Island (July 24, 1911); near Flaxman Islands, Arctic Ocean (July 31, 1913); Chamisso I. (Aug. 1, 1914).

British Columbia.—Comox (Nov. 9 and 15, 1903).

Mackenzie.—Langton Bay, arm of Franklin Bay (Sept. 12, 1910); Franklin Bay (June, 1905); Mackenzie River Delta (July 28, 1908; Sept. 8, 1909); mouth of Horton River, Franklin Bay (spring or summer, 1908).

Yukon.—Mouth of Firth River (Aug. 1, 1914 [nestling]).

California.—Monterey (Jan. 26, 1897; March 15, 1897); California (no further data given).

Texas.—Red River in Clay County (Dec. 17, 1880).

Washington.—Tacoma (May 2, 1914); Seattle Harbor (May 12, 1896).

GENERAL NOTES.

Cause of the "Fishy" Flavor of the Flesh of Wild Ducks.—Occasional specimens of wild ducks, apparently of any of the species, prove upon trial to have an unpleasant taste, which usually is called "fishy." The general conclusion in such cases is that the particular bird involved acquired its unusual flavor by feeding upon fishes. In other words fishiness is caused by eating fishes and everything that lives upon fishes is fishy.

To the writer it has long seemed that this theory, statement and conclusion are open to challenge. In the first place the majority of the species of wild ducks ordinarily eat very few fishes and secondly it is entirely improbable that an individual wild duck would depart so widely from the habitual feeding habits of its kind, and for so long a time, that as a result its flesh would be tainted.

Let us inquire into the matter of fish-eating causing fishiness. The importance of plentiful and cheap sources of protein has led to investigations of the value of fish as food for various animals, and among other points, that of the influence of this food upon the meat and other products has received attention. Investigations of the United States Department of Agriculture are summarized¹ as follows: "From the feeding experiments it appears that there has not been just cause for the assumption that the feeding of fish meal of good quality imparts a fishy taint to such products as milk, butter, eggs and meat. . . .if fed in reasonable amounts in conjunction with other foods."²

¹ Weber, F. C. Bull. 378, p. 20, 21, Aug. 22, 1916.

² This conclusion is corroborated in the following publications also. Live Stock Journ. (London), 77, 1913, No. 2039, pp. 463-4; Rev. Centro, Estud. Agron. y Vet., 7, 1914, No. 72, pp. 258-270; Bull. 610, U. S. Dept. Agr. Dec. 7, 1917, pp. 9.